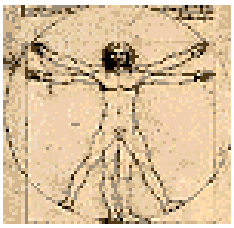


# Medical Risk Management

**An educational monograph brought to you by Comprehensive NeuroScience, Inc.**

CNS Comprehensive NeuroScience, Inc.

## Cardiovascular Disease in Patients with Schizophrenia

The purpose of this guide is to provide case managers and physicians with information to facilitate treatment of individuals with serious and persistent mental illness who also have co-occurring substance abuse disorder. The guide presents an overview of current research and clinical recommendations for patients with cardiovascular disease.

**Introduction:** The term vascular disease is a broad term used to describe three different disease states: (1) coronary heart disease (narrowing of the blood vessels that supply oxygen to the heart muscle); (2) cerebral vascular disease (narrowing of the blood vessels that supply oxygen to the brain); and (3) peripheral vascular disease (narrowing of blood vessels that supply oxygen to the legs and feet). The end results of such diseases can be devastating to the good health of patients. Coronary artery disease often leads to heart attacks, cerebral vascular disease can lead to strokes and peripheral vascular disease can lead to leg or foot amputations.

Despite the fact that these three diseases are the leading cause of death in the United States, death rates from cardiovascular disease have been on the decline since 1975. This is partly due to improved therapies, improved treatment units such as the coronary care unit, and most importantly risk factor reduction and prevention campaigns. Unfortunately, such declines in death rates have not been seen in patients with schizophrenia. Cardiovascular disease is the most common medical problem seen in patients with schizophrenia and is the most common reason for admission to a medical facility. It is also one of the leading causes of death in patients with schizophrenia.

***Point to Case Manager 1:*** ***Although overall deaths from cardiovascular disease have been decreasing, rates continue to remain high in patients with schizophrenia. Cardiovascular disease is the leading cause of hospital admissions and deaths in patients with schizophrenia.***

The role of the case manager in managing such patients and improving medical outcomes is crucial. The case manager must: (1) first understand the factors that place patients with schizophrenia at risk for cardiovascular disease; (2) determine what risk factors patients have for cardiovascular disease and work with these patients to reduce such risk factors; (3) assure that all proper measures have been taken once a patient actually develops cardiovascular disease to prevent any further complications from occurring; (4) educate the patient about cardiovascular disease and about reducing risk factors; (5) monitor adherence to medical treatments and/or medical tests.

**(1) Why are patients with schizophrenia at an increased risk for the development of cardiovascular disease?**

- Patients with schizophrenia have higher rates of other medical conditions such as high blood pressure, diabetes, obesity, high cholesterol that place them at an increased risk for developing cardiovascular disease.
- Certain medications used in the treatment of schizophrenia have been associated with weight gain, elevated cholesterol levels and diabetes. This further increases the risk of developing cardiovascular disease in these patients.
- Patients with schizophrenia may not be adequately established in a medical primary care program, or may not adhere to follow-up appointments or medications.
- Even if patients with schizophrenia are enrolled in a medical program and adhere to all follow-up appointments, they still may not receive the recommended standard of care.

The case manager can have a positive effect on all of these factors by emphasizing risk reduction, assuring proper medical follow-up, and assuring that established practice guidelines are being followed.

**(2) Reducing cardiovascular risk factors**

Several factors have been shown to increase a person's risk for cardiovascular disease. These include:

- Hypertension
- Obesity
- Diabetes
- High cholesterol levels
- Cigarette smoking
- Sedentary life style (i.e. the classic "couch potato")

The case manager should screen every patient with schizophrenia for these risk factors and, if appropriate, the case manager should counsel the patient on risk reduction.

<u>Hypertension</u>
Hypertension is a well established risk factor for both cardiovascular disease and for developing complications such as heart attacks and. Blood pressure is measured by two

numbers, the systolic blood pressure is the top number and the diastolic blood pressure is the lower number. (**See the hypertension guide.)** Both numbers are equally important, but in people over 50 years of age, the systolic pressure is more important in determining risk. Anyone with consecutive systolic blood pressure readings of 140 mm Hg (millimeters of mercury) or greater and/or diastolic blood pressure readings of 90 mm Hg or greater, is considered to have hypertension. Patients with schizophrenia have not been found to have greater rates of hypertension compared to the rest of the population. However, schizophrenics do have several risk factors for developing hypertension including obesity and smoking.

***Point to Case Manager 2:*** ***Blood pressure should be monitored at every clinic visit, and both systolic and diastolic blood pressures should be treated if elevated to prevent cardiovascular complications in these patients.***

Obesity

Obese adults have an increased risk for developing cardiovascular disease. Studies have shown that as many as 64% of schizophrenic patients are obese. This may in part be due to some of the newer medications taken to control the symptoms of schizophrenia. This class of medications known as "atypical anti-psychotics", which include: risperidone (Risperdal), olanzapine (Zyprexa), quetiapine (Seroquel) and clozapine (Clozaril), have a greater potential to cause weight gain than some of the older medicines used to treat schizophrenia. Thus, the weight gain that occurs with these medications places these patients at a greater risk for developing cardiovascular disease in the future. Studies have shown that even modest weight loss (10 to 15 pounds) may significantly reduce cardiovascular risk. If a patient with schizophrenia who is obese returns to his/her ideal body weight, his/her risk of developing cardiovascular disease may decrease as much as 55%.

***Point to Case Manager 3:*** ***Every schizophrenic patient should have his/her weight monitored in every visit. Even modest weight gains should be noted. It is important to also advise these patients of the benefit of weight loss. They should be encouraged to eat more fruits and vegetables as well as diets high in fiber. Increase in physical activity should be encouraged. A patient who continues to gain weight should also be considered for a referral to a nutritionist.***

Diabetes

This section is meant as an overview of the effects of diabetes on cardiovascular disease. For greater details on managing the schizophrenic patient with diabetes, please refer to the guide on diabetes. Diabetes is one of the most important risk factors for cardiovascular disease. Patients, who only have diabetes and no other risk factors, can still have a very high risk for developing cardiovascular disease. The rate of diabetes seen in patients with schizophrenia is twice as much as what is seen in the general population. Furthermore, the number of new cases of diabetes diagnosed in patients with schizophrenia is increasing every year. Part of the reason for this may have to do with the use of some of the newer medications (atypical anti-psychotics) used to control the symptoms of schizophrenia. The two most common medications associated with the development of diabetes include:

clozapine (Clozaril) and olanzapine (Zyprexa). Schizophrenic patients who are treated with these medications may develop diabetes regardless of whether or not they also gain weight.

***Point to Case Manager 4:*** ***Every schizophrenic patient being treated with an atypical anti-psychotic medication should be routinely screened for diabetes. The assumption that only those patients who are obese are at risk of developing diabetes should NOT be made, since studies have shown that all patients on these medications are at risk for diabetes, not just those who are obese.***

Unfortunately, several studies have failed to demonstrate that tighter glycemic (sugar) control reduces the risk of cardiovascular disease. Despite this, it is important for the case manager to assure that all patients are properly screened for diabetes, because reducing other risks in a diabetic patient helps reduce cardiovascular disease.

- *Diabetes and cholesterol*: a patient with diabetes needs to have his or her cholesterol checked at least once a year. The current guidelines emphasize that all diabetics must have a certain type of cholesterol, known as the Low Density Lipo-protein (LDL) level below 100. Furthermore, a recent study also showed the benefit of adding certain cholesterol lowering medications known as "statins" to all diabetics regardless of what their cholesterol levels are. Some examples of these medications include: simvastatin (Zocor), lovastatin (Mevacor), atorvastatin (Lipitor), pravastatin (Pravachol). These medications have been shown to significantly reduce cardio-vascular disease even in diabetics with normal cholesterol levels.
- *Diabetes and hypertension*: blood pressure must be carefully monitored in all diabetics and aggressively managed. Controlling blood pressure may be more important than controlling blood sugar levels.
- *Smoking* cessation must be aggressively pursued.
- *Other lifestyle changes* such as weight control and physical activity should be encouraged. Excessive alcohol intake (more than 3 drinks per day) should be moderated.
- *Aspirin* has been shown to be beneficial in diabetics in preventing cardiovascular complications. All diabetics should be taking at least a baby aspirin (81 mg) or an enteric-coated full dose aspirin (325 mg) provided they are not allergic to aspirin and have not experienced any adverse effect to aspirin in the past.

***Point to Case Manager 5:*** ***The case manager should be aware of current recommendations that all diabetic patients take a cholesterol lowering medication known as a statin regardless of their cholesterol level and an aspirin, provided there are no medical reasons for NOT taking these medications.***

Elevated Cholesterol Levels

Several studies have shown the benefit of lowering cholesterol even in patients who do not yet have any evidence of cardiovascular disease. When we think of cholesterol, we often think of the **total cholesterol**. However, it is important to understand that cholesterol

consists of three major components. These include: High Density Lipo-proteins (HDL) often referred to as "good cholesterol", Low Density Lipo-proteins (LDL) often referred to as "bad cholesterol", and triglycerides. The rates of high cholesterol in patients with schizophrenia have not been well established, partly because of the lack of available data. For example, on chart reviews it was determined that many patients with schizophrenia never had their cholesterol levels checked. Furthermore, for those who did have their cholesterol levels checked, only the total cholesterol was obtained and **not** HDL levels, LDL levels or triglycerides. This may limit the ability to reduce cardiovascular risk (see below).

***Point to Case Manager 6:*** ***Every patient with schizophrenia should have his/her total cholesterol, HDL, LDL and triglyceride levels checked at least once a year. It is important that this blood work be done while the patient has been fasting for at least 8 hours.***

Certain newer medications used to treat schizophrenia, such as clozapine (Clozaril), olanzapine (Zyprexa) and quetiapine (Seroquel) can cause triglyceride levels to rise. Triglyceride levels above 200 place the patient at an increased risk for developing cardiovascular disease in the future.

***Point to Case Manager 7:*** ***If a patient is on clozapine, olanzapine or quetiapine, FASTING triglyceride levels should be obtained. If triglyceride levels are above 200, some type of treatment should be started to lower this level.***

In terms of overall cardiovascular disease, the current guidelines focus exclusively on LDL levels only. The LDL goal set for each patient is based on how many other risk factors the patient has for cardiovascular disease. The risk factors that determine the LDL goal include: age, hypertension, smoking, low HDL level, and family history of cardiovascular disease. For those patients with two or more risk diabetes risk factors, the LDL level should be maintained below 130. If a patient has diabetes or has established cardiovascular disease, such as a previous heart attack or stroke, the LDL level should be below 100.

***Point to Case Manager 8:*** ***The LDL level should be known for each patient. A cholesterol lowering agent should be considered if the LDL level is above 130 and the patient has two or more other risk factors for cardiovascular disease or if the level is above 100 or the patient has either diabetes or established cardiovascular disease. Blood pressure should be controlled before starting aspirin.***

***Point to Case Manager 9:*** ***Aspirin therapy should be considered for all patients with abnormal cholesterol profiles (high total cholesterol, high LDL, high triglycerides or low HDL) and other significant risk factors for cardiovascular disease, provided there are no medical reasons not to do so.***

Smoking

Smoking is a key modifiable risk factor that needs to be aggressively pursued in patients with schizophrenia. Smoking increases the chances of having a heart attack, stroke, and poor circulation to the legs and feet. Twice the number of patients with schizophrenia smoke compared with the general population. Smoking is a serious problem in these patients and as such the case manager will need to screen for smoking (do not ask only about cigarettes, but inquire about use of cigars, pipes and chewing tobacco as well), and then counsel about smoking cessation.

Patients who quit smoking significantly reduce their risk for cardiovascular disease. After one year of quitting, the risk of experiencing a heart attack is reduced by about 50%. If a patient has not smoked for several years, his/her risk of having a heart attack becomes similar to those that have never smoked.

***Point to Case Manager 10:*** ***If a patient is reluctant to stop smoking, he/she should be encouraged to consider decreasing the number of cigarettes smoked every day or to switch to a cigarette brand with the lowest nicotine concentration. If available, and at all possible, the patient should be referred to a smoking cessation clinic.***

Sedentary Lifestyle

There is a direct relationship between the amount of exercise an individual participates in and his/her risk of developing cardiovascular disease. Patients with schizophrenia are often predisposed to lower levels of physical activity because:

- These patients are often on medications that can be sedating
- The symptoms of schizophrenia can often prevent these patients from participating in exercise
- Lack of proper resources for physical activity

Only moderate intensity exercise is required to achieve a reduction in cardiovascular risk. High intensity exercise is NOT needed to decrease cardiovascular risk.

***Point to Case Manager 11:*** ***All patients with schizophrenia should be encouraged to engage in life-long appropriate physical activity. Physical activity should consist of brisk walking for 30 minutes or more, four to six times a week. Patients should be informed that end points indicating adequate physical activity include: (1) breathlessness, (2) fatigue, (3) sweating.***

**(3) Assure that all the proper measures have been taken once a patient actually develops cardiovascular disease to prevent further complications of the disease.**

In the previous section the focus was on those measures the case manager may take, along with the provider of record, to prevent cardiovascular disease from occurring in the patient with schizophrenia. Once cardiovascular disease is present, there are measures that can be taken to prevent further complications from occurring. For example, if a schizophrenic patient has developed signs of coronary artery disease, the goal should then be to prevent

the patient from having a heart attack. If a schizophrenic patient has a heart attack, the goal should be to prevent a second heart attack.

There are no tests that can be done to diagnose cardiovascular disease with complete accuracy. The best clue that there may be a problem very often is the patients themselves, with the symptoms they are describing. Unfortunately patients with schizophrenia may often experience such symptoms but never report them or may report such symptoms, which are often ignored. It is important to inquire about the presence of such symptoms and if present, assure that proper follow-up is pursued.

Some common symptoms associated with the presence of coronary artery disease include:

- Chest pain that occurs when a patient is exerting him/herself (such as walking, climbing stairs, exercising) and subsides when the exertion is stopped.
- Chest pain that becomes more frequent or lasts longer as time goes by.
- Shortness of breath that progressively worsens on exertion or at rest.

Some common symptoms associated with the presence of cerebral vascular disease include:

- Transient loss of strength in the arms or legs
- Transient paralysis in any part of the body
- Dizziness, lightheadedness or even fainting
- Blurred vision or loss of speech

Some common symptoms associated with the presence of peripheral vascular disease include:

- Calf pain when walking that improves after resting
- Cold feet and toes

If a patient notes any of those symptoms, the case manager should then inquire about the presence of any risk factors and then report both the symptoms that are present as well as any associated risk factors to the provider of record.

The management plan that follows should then consist of three parts: (1) schedule appropriate tests to try to determine if disease in present, (2) reduce if at all possible all/any risk factors, (3) prescribe any prophylactic treatment to prevent damage to the heart, brain or legs from occurring.

The following chart summarizes the most appropriate tests to perform for each of the three types of cardiovascular disease as well as what could be done to minimize complications. In terms of risk modification, the risks are identical for all three types of cardiovascular disease as previously outlined in this monogram. These include: improving cholesterol profiles (lowering total cholesterol, LDL and triglycerides, while raising HDL), controlling blood pressure, controlling diabetes, weight reduction, participating in a moderate exercise program and of course, quitting smoking. This last item is especially important in those patients with peripheral vascular disease.

| Type of Cardiovascular Disease | Screening Tool | Intervention |
|---|---|---|
| **Coronary Artery Disease** (clogging of arteries to heart) | • Exercise Stress Test with thallium<br>• Coronary angiogram (cardiac catheterization) | • Aspirin (or other blood thinning agents)<br>• Coronary angioplasty<br>• Coronary artery bypass surgery |
| **Cerebral Vascular Disease** (clogging of arteries to brain) | • Ultrasound of carotid and/or vertebral arteries<br>• Carotid angiogram<br>• MRI or CT of brain | • Aspirin (or other stronger blood thinning agents)<br>• Carotid surgery |
| **Peripheral Vascular Disease** (clogging of arteries to legs and feet) | • Measurement of pulses in the legs and feet | • Aspirin (or other stronger blood thinning agents)<br>• Surgery |

Finally, if a patient with schizophrenia has a heart attack (Myocardial Infarction), a stroke (Cerebral Vascular Accident) or loses circulation to his legs/feet and requires an amputation, there are things that can be done to prevent further complications.

For a patient that has had a heart attack:

- Risk modification
- Cardiac Rehabilitation may be appropriate
- They should all be on a blood thinner provided there are no medical reasons not to be on one. Blood thinners may be: an aspirin, coumadin (warfarin) or plavix (clodiprigel).
- They should all be on a class of medications known as beta-blockers, provided there are no medical reasons not to be on one. Examples of common beta-blockers include: atenolol, propranolol, metoprolol.

For a patient that has had a stroke:

- Risk modification
- Physical therapy and rehabilitation may be appropriate
- They should all be on a blood thinner provided there are no medical reasons not to be on one. Blood thinners may be: an aspirin, warfarin (Coumadin) or clodiprigel (Plavix).

For a patient that has lost circulation to the legs or feet:

- Risk modification
- They should all be on a blood thinner provided there are no medical reasons not to be on one. Blood thinners may be: an aspirin, warfarin (Coumadin) or clodiprigel (Plavix).

**(4) Educate the patient about cardiovascular disease and about reducing risk factors**

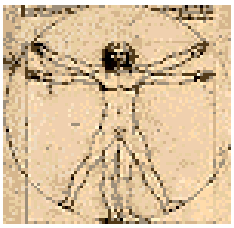
The goals of a cardiovascular patient educational program should be:

- To assure that every patient understands what the complications of cardiovascular disease are, which include: a heart attack, stroke, and possible loss of limbs and in some cases death.
- To assure that every patient understands the benefits of risk reduction and mechanisms for doing so.
- To assure that every patient understands what symptoms to look for that may suggest the presence of cardiovascular disease and to emphasize that if the patient experiences these symptoms to immediately inform their medical providers (or the case manager)
- To assure that every patient understands when it is appropriate to immediately contact a medical professional or seek emergency help. These may include: chest pain that is not going way, chest pain that is occurring more frequently and lasting longer, sever shortness of breath, paralysis anywhere in the body, a cold foot or leg that has a pale blue hue.
- To assure that every patient who is taking medications for his/her cardiovascular disease understand why they are taking those medications.

**(5) Monitor adherence to medications as well as the presence of any side effects from these medications**

The case manager may consider asking all schizophrenic patients with a history of cardiovascular disease the following series of questions (aimed to serve only as a guide):

- *Do you know which of your medications are being used for your heart and circulation? (Correct any misconceptions)*
- *Can you tell me when and how often you are supposed to take each of these medications? (Correct any misconceptions)*
- *Everyone tends to miss taking his/her medication every now and then. Has that happened to you? How often do you miss taking these pills within a given week?*
- *Have you experienced any side effects from your medications that you wish to tell me about?*



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**Points to Case Managers:**

1. **The following are all cardiovascular risk factors: Hypertension, Diabetes, Obesity, Abnormal cholesterol profile, Sedentary life style, Previous cardio vascular event (HEART ATTACK/STROKE)**

2. **Blood pressure readings should be monitored for the patient at every visit.**

3. **The patient should be screened for diabetes**

4. **The patient should have a complete cholesterol panel done and the values of the total cholesterol, LDL, HDL and triglycerides should be noted.**

5. **The patient's weight should be recorded at each visit.**

6. **A common symptom associated with coronary artery disease is chest pain that occurs when a patient is exerting him/herself and subsides when the exertion is stopped. Another indication is chest pain that occurs more often or lasts longer. Shortness of breath that progressively worsens on exertion or at rest may also indicate that coronary artery disease is present.**

7. **Some common symptoms associated with the presence of cerebral vascular disease include: Transient loss of strength in any of the arms or legs, transient paralysis in any part of the body, dizziness, lightheadedness or even fainting, blurred vision or loss of speech.**

8. **Some common symptoms associated with the presence of peripheral vascular disease include: Calf pain when walking that improves after resting, or cold feet and toes.**

9. **There are no tests that diagnose cardiovascular disease with complete accuracy. The best clue that there may be a problem very often is the patients themselves, with the symptoms they are describing.**

10. **An EKG is useful in determining whether a patient has had a myocardial infarction (heart attack) in the past or is currently in the process of having a heart attack. An EKG cannot predict who is at risk for having a heart attack in the future.**

11. **An Exercise Stress Test can be used as a screening test to determine who may have coronary artery disease and who may be at risk for having a heart attack. An exercise stress test is not completely accurate. If this stress test is positive, the patient will require a cardiac catheterization. A cardiac catheterization is the gold standard test for diagnosing coronary artery disease and determining who is at greatest risk for having a heart attack.**

12. **A patient with established cardiovascular disease or that has had a previous heart attack or stroke, should currently be on an aspirin or blood thinner.**

13. **If the patient has significant risk factors for cardiovascular disease, their LDL cholesterol value should to be below 130.**

14. **If the patient has diabetes or has had a previous cardiovascular event such as a heart attack, their LDL cholesterol level should to be below 100.**

15. **If the patient has had a heart attack, they currently should be on a beta-blocker.**

16. **Every patient needs to be educated about the benefits of risk reduction.**

17. **Every patient needs to be educated about when to immediately contact his or her medical provider or an emergency room.**